

Attention Directing Flight Instrument Display

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All flight instrument displays currently in use require a pilot to scan the instruments, viewing them one after another. The pilot's "headwork" transforms the instrument displays into flightpath information. It is critical that the scan not "break down" during instrument flight; hence, a pilot flying on instruments will maintain a constant instrument scan while simultaneously performing all other required tasks.

All such flight instrument displays require a great deal of attention. Individual instruments can only be viewed successively. They require focal attention: the pilot must look at, or at least near, each instrument. Moreover, the instruments do not grab the pilot's attention when deviations from flight path occur. The pilot has to look at the instrument and interpret what the instrument is saying, integrating that information with information from the other instruments before flightpath errors can be detected and corrected.

Flight instruments ideally should provide all the important flight information to the pilot quickly, in

an integrated fashion, so that the pilot can comprehend at a glance his or her position in space. Moreover, flight instruments should be designed to grab attention when deviations from flight path occur, so that the pilot does not have to "hunt" for them.

The flight instrument display we developed integrates all the flight information into a single display in such a way that the pilot can clearly understand, at a glance, his or her position in flight. With our display, the pilot does not need to view the instruments serially, integrating and interpreting what he or she sees. Our display reduces the time spent on instruments to about 15% of that required when traditional displays are used. Moreover, deviations from flightpath are immediately apparent. Because of the way flightpath information is visually encoded in our display, the pilot instantaneously recognizes flightpath deviations and is instinctively drawn to corrective maneuvers. Furthermore, our display is compatible with essentially every aircraft that has flight path information coded electronically.